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ABSTRACT

This paper explores the practical and philosophical issues involved in Web site construction so that the finished site truly reflects ts creator. The author uses the term "syllaweb" for a hyperlinked syllabus and declares that it was an outgrowth of Vannevar Bush's original description of computerized graphical communication as a web, analogous in its workings to the natural process of the brain with its "intricate web of trails carried by the cells." Discussion includes the nonlinear nature of hypertext; the teacher-learner-text relationship; the teacher and student role; student participation; articulating the expected outcomes of assignments; the need for topographical or mapping guides; the size and attributes of a computer screen; choices of graphics; online discussion and the benefits of group activities; and the capacity of electronic text for infinite and easy révisability, interactivity delayed and immediate, duplicability, transmissibility, storage, and attendant cognitive enhancement. (AEF)

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WEAVING A SYLLAWEB: CONSIDERATIONS BEFORE CONSTRUCTING AN ON-LINE SYLLABUS

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"Learning in Cyberspace" describes a webbed learning environment as open, distributed, dynamic, globally accessible, asynchronous, filtered, interactive and archival [1], all characteristics that must be dealt with in the planning of any web site. Frequently, an educator's site will derive from a paper syllabus that he is attempting to transfer to a computer, which he envisions as a "helpmate" or "assistant" whose primary function is to move text efficiently between instructor and class. [2] In fact, far more is involved. If the prospective web publisher's personality contains a high degree of self-efficacy, an enthusiasm for change and an inclination to risk-taking, all is likely to go well. [3] Such a teacher is about to radically restructure previous conceptions of oneself, one's students, texts, and even of the learning process itself.

This presentation does not undertake to direct the mechanical process of building a web site, a service furnished by any number of internet service providers and software vendors. Instead, it explores the practical and philosophical issues that inform construction so that the finished site will truly reflect its creator, who, in turn, has adjusted to the realities of instructional relationships in hyperspace.

The term "syllaweb" for a hyperlinked syllabus was an outgrowth of Vannevar Bush's original description of computerized graphical communication as a web, analogous in its workings to the natural processes of the brain with its "intricate web of trails carried by the cells." [4] Through the use of hypertext--a term coined in 1965 by Ted Nelson--educational as well as commercial material can be explored in nonlinear, interactive ways that contain elements of word processing, information linking and, increasingly, multimedia. [5] At a literal level, hypertext or hypermedia documents are those which divide information into separate files linked to one another in a series determined by the user. However, the metaphor of the spider's web is descriptive also, particularly for the educator who is attempting to be the spider and not the fly, the thoughtful builder of an intricate construct which enmeshes students in a complex learning experience.

Perhaps the greatest adjustment for the academic writer is to the distributed nature of hypertext. The linear nature of book construction is so ingrained in most literate souls that they are unconscious of it; thus, most teachers reflexively mount their initial syllabi in chronological order, as I did myself. [6] This tactic has the advantage of providing a central orientation location, or landing, which tells students where they are in their professor's web, as recommended by the Institute for Advanced Technology in the Humanities' "Guide to Academic Publishing." [7] Also, since most students have long since internalized well-conditioned responses to syllabi, a traditional central syllabus prepares them to exhibit established academic behaviors which newly webbed instructors are already comfortable with. Professors who choose to use, say, a table or a circle of "hot buttons" or a large graphic with clickable sections instead are subverting this familiar interpersonal pattern, a move which could be beneficial but nevertheless has significant implications for students' acceptance of responsibility for acquisition of course material.

As soon as links to the central site are created, however, the teacher-learner-text relationship will shift dramatically, even if the instructor chooses the simplest possible pattern of listing assignments

chronologically, then creating a linked file which explains each one. Once this happens, each assignment file takes on a semi-independent existence; Landow posits that the formerly unified elements of the class learning structure "fragment, break apart, assume more individual identities." [8]

Paradoxically, the very interconnectedness of a web means that readers cannot hold a syllaweb in one piece as they do a book or read a web site as they do paper texts, proceeding sequentially from beginning to end. "More like the 'real world,' where meaning is made ransactionally, hypertexts possess a multiplicity of possibilities, each of which is equally valid and none of which is the 'correct' order." [9] No sequence of site visitations is then privileged above another; instead, each is informed by whatever units are read before and after it, no matter who the authors are or what the content. [10]

The instructor, then, has a sharply limited but important function: to create carefully chosen links to the central site or index page and to each other site, not just because it is technically possible to do so, but because each adds enrichment to the users' experience. Even the use of graphics or background textures and colors will affect reader perception; one must constantly resist the urge to technologize for its own sake unless radical chic or advanced technological skill are part of one's image. The ready availability of icons at such locations is subtly seductive, especially when added to the backgrounds and colors offered. Not surprisingly, Netscape itself is a purveyor of bells and whistles.

If the teacher expects student involvement based on willing log-ins rather than forced appearance at a scheduled time in a specific classroom, research shows that interesting, varied site material in content as much as appearance most correlates to enthusiastic participation. [11] Clearly, one advantage of focusing on appearance is that, over time, students will form an incremental impressions of the instructor through the filter of her site. At a crude level, she can p resent herself graphically or photographically. My own home page [12] at George Mason University in affluent Fairfax, VA, near Washington, DC, opens with a collaborative image of me working with a student at a cluttered table. Of course, a more neutral "mug shot," such as those on my department's page, is always an option. [13]

It rapidly becomes clear that the very nature of the web requires re-situating the instructor. The oft-noted dichotomy--especially in humanities departments like my own--between techies and technophobes reflects, at the lowest level, a division between those willing to make the enormous investment in time and effort required to learn new techniques and those who are not. Less obviously, webbed instruction can imply devaluation of the very individual who is making this investment and who, given the constant evolution of graphic technology, must expect to continue doing so indefinitely. An author is not here considered the owner of a fixed, copyrighted text whose publication conveys intellectual validation, promotion in the academy, at least limited authority--indeed, the very class, status and division of labor by which the academician is usually defined. [14] No longer the exclusive arbiter of course content, readings and order of activities, a teacher is principally charged with creating entry points to learning materials only some of which he or she has created--and then to be prepared when students find others and include them too.

In her **Computers and Classroom Culture**, Janet Schofield cites classic studies showing that as much as 40% of a teacher's actions in a traditional classroom are specifically intended to maintain and display authority. Teachers maintain firm control of whom to call on or recognize, whom to rebuke and even whom to help. [15] All these activities are impractical, if now downright impossible, on the web. Further, it is difficult to feel thoroughly in charge when, as so often happens, some students know more about computers and web tools than their instructor does. [16]

The control of the writer/professor seems even less when students can enter or leave a course section at

will, follow linked material in the order of their own choosing, or respond to asynchronous discussions or even assignments whenever they please. It is those same students, not their teacher, who "create their own model or system for employing their skills to sift, sort, and distill information. The professor only provides the student with the process systems skills which empower the student." [17] The implications of this control shift need to be revisited almost continuously to maintain a teacher's "personal feelings of comfort and self-esteem," [18] if he or she has not completely made the transition to a decentered classroom.

As long as courses continue to be subject to grading and the earning of academic credit, however, professors will retain their traditional responsibility to create purposeful activities which can be objectively evaluated. Elementary and secondary teachers in the United States have a leg up on this process, since certification curricula require them to study the preparation and phrasing of formal instructional objectives. (Direct reference to such handbooks as Gronlund's **How to Write and Use Instructional Objectives** may also be helpful to college faculty.)

If students and faculty do not meet, each assignment will have to stand on its own; each must not only reflect the maker's philosophy and course goals, but must "convey to others a picture of what a successful learner will be able to do that is identical to the picture the objective writer had in mind." [19] This principle is not solely applicable to concrete skills like correctly formatting a ten source bibliography on a prescribed topic. The professor who is also trying to foster attitudes of, say, appreciation, competence or understanding is rendered unable to measure these by classroom comments or body language in a virtual class. Instead, s/he will need to formulate behaviors which are observable in a computer-based environment and which s/he is willing to accept as visible evidence of the desired mental/internal and therefore invisible cognitive response. [20]

Since the student is responding in a physical environment inaccessible to the instructor, the teacher may also have to articulate the conditions in which the assignment should be done, the allowable supplies, the desired performance, the product of that performance and the criteria for evaluation. [21] Even more challenging, the asynchronous (not constrained by time) nature of a webbed education means that all this planning should be done **before** the semester begins, since pupils may access any portion of the syllabus at any time. Happily, Mager notes that instructors "may not have to do much else . . . Because often students are already able to do what you are asking them to do and will be happy to demonstrate their ability, now that they know what is wanted of them." [22]

Because web movement can become extremely confusing if unstructured, the professor also needs to provide not only one or more central landing sites which contain clear links to other documents, but a generalized "topographical" or "mapping" guide to assist students in their navigational choices. (Not for nothing is the web sometimes called "hyperspace.") Consistently formatted and thus instantly recognizable links and their relationships must be visible from every major stopping point, since several studies have determined that "when the tools were constantly present . . . participants made significantly more use of them" and thus accessed significantly more material. [23] In return for the considerable labor required to create them, well-planned guides to movement offer the instructor a chance to provide his or her own filters for cyberspace, gaining a small but definite degree of control over his or her pupils as s/he preselects their most likely choices. [24]

Another avenue for unobtrusive management is inherent in the size and attributes of a computer screen. While it's true that a pedagogue cannot control the order of student access to hypertext material, she can determine what is to be fitted into each screen-sized frame. Since monitors emit light light rather than reflecting it as printed pages do, screen display presents a much poorer contrast between image and

background than paper. Inherent flicker, reflection off the protective glass shield and divergent color wavelengths all combine to fatigue the user's eyes. [25]

As she constructs her display, the teacher can minimize such discomforts, greatly improving the student's response to the site. Choices of graphics, the allocation of white space and text--not to mention the intricacy of each--control the students' pacing. The simple selection of a clear, readable text font formatted at no more than 65 characters per line (versus the 80 characters that are possible) makes it far more likely that a reader will complete all material before clicking away to another site. Using such consistent organizational patterns as putting identically formatted page labels at the top right or a shaded instruction bar to the left side of each screen serves to maximize use of the site's features. [26]

Given a coherently constructed syllaweb with all its materials mounted attractively, the professor must then be prepared to await his students' response to the inherent interactivity of the medium. Teachers should anticipate that in a webbed environment, the students' role too will be transformed. For one thing, students are not necessarily the only users accessing an educational site. Since sites are globally accessible, a properly worded web search or an exterior link can bring outside visitors at any time--sometimes fortuitously, as when Steve McCarty found my site from Japan and suggested that I submit a proposal for this conference. When a pupil does check in, she may do so from any link or move to any other link, so that whatever the instructor designed as the beginning or entry point to his syllaweb may or may not operate as such.

Similarly, a pupil's exit point is not necessarily the instructor's intended end, but is simply wherever she signs off from. This suggests, as Ted Nelson realized as far back as 1961, that "There is no Final Word. There can be no final version, no last thought." [27] Just as Daniel Derrida envisioned long before it was technically possible, the course texts are no longer enclosed in a book or by a limited body of material. Boundaries betwen activities and information are blurred or even open --a very unsettling phenomenon to professors wedded to paper text [28] with its linear control of knowledge and its imperative to achieve closure at a recognizable end point.

The unstated other side of open-endedness, interestingly for pedagogues, is a potential for the creation of an extendible cyber-community within a class. Teachers can build into their curricula requirements for computer conferencing or participation in bulletin boards or discussion groups which will maintain an educational conversation around some shared object, be it only a thought-provoking strand initiated by the instructor. My spring '97 students who participate in a mailing list cum discussion group have responded articulately and in quantity to my initial post questioning whether excessive concern over sexual harassment has served to alienate men and women in the workplace.

In her **Online Education**, Linda Harasim claims that such group activities foster the twin virtues of, first, eliminating visual image prejudice, thus forcing contributors to "engage with our collaborators at some level of metathought" instead of being entertained and possibly misled by appearances. Also, online discussion encourages an equitable distribution of airtime, [29] particularly when an asynchronous format allows shy students or those with poor skills in oral language to polish their contributions before posting. It can also facilitate the kind of group conceptual "leaps" that are so rewarding in the regular classroom and so much rarer when individuals work in isolation. [30] If the professor chooses to maintain the web site even after the semester ends, he then has the opportunity to create a sort of group memory, an archive of the transactions of that particular group at one particular time. [31]

As George Landow has remarked, "Hypertext changes our sense of authorship and creativity (or

originality) by moving away from the constrictions of page-bound technology . . . the electronic environment is a rich context in which doing work and sharing work become virtually indistinguishable." [32] In fact, he posits that in a hypermedia environment, all writing becomes collaborative, since the student reader helps the teacher-author create the text anew each time she chooses a site or pursues a link. [33] Yet in the very fungibility of text, as Wheeler calls it, [34] lies some of the most exciting educational possibilities for the well-prepared instructor.

In electronic form, student "text" exhibits a capacity for "infinite and easy revisability, interactivity delayed and immediate, duplicability, transmissability, storage, and attendant cognitive enhancement." [35] Publications that can be downloaded, edited and uploaded again for others to do the same with may be almost frighteningly malleable, but they do actively encourage skills in editing and criticism. [36] These can be built right into a syllaweb without having to worry about whether the person in possession of the only copy of a paper text will show up for class next week or not. Posting a draft to an entire class or work group ensures that all members will practice revision skills and expand their content base while reducing the time otherwise required of the instructor to read and fully comment on each paper. Indeed, the student reader is effectually forever present in each text, represented on-screen by a blinking cursor or the arrow tool. Here again, the student appears to be empowered by her ability to automatically manipulate an abundance of dynamic possibilities within her classmates' texts, [37] while the teacher apparently must accept a corresponding loss of status and control. Of course, in practice it is the teacher who determines the criteria for review as well as which texts will be reviewed, how often and by whom.

I would suggest that what the newly minted cyber-instructor needs most, beyond technical expertise, is a different model for engaging electronic texts. Patricia Sullivan, for instance, describes the need for a "pedagogy supporting the process of seeing the page . . . [rendering the writer] able to negotiate a look for pages that supports the aims of texts." When writing incorporates design and publishing values, little respected in text-based academia, it will enlarge rather than reduce the writer's skills as well as his field of action. [38]

In short, as the students say, an instructor new to cyberspace needs to "get over himself." He will no longer feel diminished by his students' free-range habits if he can accept the innate post-structuralism of the web. There, "text is indeterminate, created anew by each encounter with it; the meaning of a text is not encoded in the words, but in the interaction between text and reader . . . the interpretation of a text is an account of what happens to a reader." [39] When textual interplay becomes central, both teacher and student participate in the democratizing atmosphere of the web, where nonlinear structure guarantees that no text is marginalized or subordinated, no group's voice either privileged or silenced, and "the desire to reduce complex issues to Right Answers gives way to resonances along a spectrum of interpretation." [40]

ENDNOTES

[1] "Learning on the Web"

[2] Hawisher and Selfe 45.

[3] Moersch 40-41.

[4] Eldred and Fortune, "Exploring the Implications of Metaphors for Computer Networks and Hypermedia" in Hawisher and LeBlanc 70.

[5] Megarry in Bell, Davies and Winders 50.

[6] <http://osf1.gmu.edu/~jjohnsto>

[7] <

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[8] Landow 53.

[9] McDaid, "Toward an Ecology of Hypermedia" in Hawisher and Selfe 213.

[10] Landow 53.

[11] Steeples, Goodyear and Mellar, "Flexible Learning in Higher Education: The Use of Computer-Mediated Communicztions" in Kibby and Hartley 88.

[12] <

[13] Landow 51.

[14] Landow 51.

[15] 39.

[16] 114-15.

[17]Harasim 24.

[18] Schofield 115.

[19] Mager 19.

[20] Mager 24.

[21] Mager passim.

[22] 87.

[23] Hutchings, Wall and Thorogood, "Experiences with Hypermedia in Undergraduate Education," in Kibby and Hartley 42.

[24] Eldred and Fortune in Hawisher and LeBlanc 69.

[25] Costanzo 57-58.

[26] Costanzo 59.

[27] Landow 58.

[28] Landow 58-61.

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[29] 125 and 129.

[30] Levinson in Harasim 25.

[31] "Learning on the Web."

[32] 94.

[33] Landow 33.

[34] "Computer Conferencing in the Context of the Evolution of Media," in Harasim 9.

[35] Levinson in Harasim 9.

[36] Levinson in Harasim 9.

[37] Sullivan, "Taking Control of the Page: Electronic Writing and Word Publishing," in Hawisher and Selfe 59.

[38] Sullivan in Hawisher and Selfe 50-56.

[39] Ray and Barton, "Technology and Authority" in Hawisher and Selfe 189-90.

[40] McDaid in Hawisher and Selfe 207.

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